REMARKS

Applicants appreciate the detailed examination evidenced by the Official Action mailed November 6, 2006 (hereinafter "the Official Action"). Applicants also appreciate the indication that Claims 5, 7-9, 11, 13, 15, and 17 include patentable subject matter.

Respectfully, Applicants maintain that the pending claims are patentable over the cited references. For example, even if Nasuno and Baum were combined, the combination would not disclose or suggest, at least, a power amplifier that is "configured to transmit information...during a first time interval and configured to avoid transmitting information during a second time interval" as recited in the independent claims. Furthermore, there is no clear and particular evidence of a motivation or suggestion to combine these references as required under Section 103. For example, the approach outlined in Nasuno is discussed in the background Baum as being undesirable, which actually teaches away from a combination with Nasuno. Applicants respectfully request the withdrawal of all rejections and the allowance of all claims for at least the reasons described herein.

The Independent Claims Are Patentable Over The Cited References.

Claims 1-4, 6, 10, 12, 14, 16, 19, and 21 stand rejected under 35 U.S.C. § 103 over U.S. Patent No. 5,990,736 to Nasuno et al. ("Nasuno") in view of U.S. Patent No. 6,396,000 to Baum ("Baum"). *Official Action, page 2.* Applicants respectfully traverse the rejection of these claims as even if Nasuno and Baum were combined, the combination would not disclose all of the recitations of the pending claims.

In particular, Applicants respectfully submit that even if combined, Nasuno and Baum do not disclose or suggest, at least, a power amplifier "configured to transmit" information . . . during a first time interval and configured to avoid transmitting information during a second time interval" as recited in the independent claims. As discussed in Applicants' specification, this may be achieved by switching the power amplifier on/off during the respective time interval. For example, in some embodiments according to the invention, as described in Applicants' disclosure at page 7, lines 18-25:

> For example, in D-AMPS TDMA, the power amplifier system 141 may be switched on and off 50 times per second

> whereas in GSM TDMA, the power amplifier system 141 may be switched on and off 217 times per second. Switching the power amplifier system 141 on (during transmit times) and off will cause direct current provided by the power source 161 to be drawn by the power amplifier system 141 and returned to the power source 161 in accordance with the frequency with which the power amplifier system 141 is switched.

In contrast, Nasuno shows that the power to the power amplifier is always on. Figure 2 of Nasuno shows that the power connections 4A and 4B to the first and second stages of the power amplifier are static and, therefore, the power amplifier of Nasuno is not configured to transmit during a first interval and avoid transmitting during a second interval.

The Official Action appears to take the position that the modulator 20 provided to the input of the power amplifier of Nasuno discloses or suggests the recitations of the independent claims discussed above. *See Official Action, pages 2-3.* Applicants respectfully point out that the modulator input is provided as data to the power amplifier and, therefore does not determine **when** the power amplifier transmits and does not transmit, but rather only provides **what** data is transmitted. In other words, the power amplifier of Nasuno appears to be always on, regardless of the data provided to it by the modulator.

Furthermore, there also does not appear to be any discussion of TDMA, despite the assertion in the Official Action that Nasuno discusses as much. For example, the Official Action states:

> A power amplifier configured to transmit information to a wireless communications network during a first time interval and configured to avoid transmitting information during a second time interval (figures 1 and 2, column 3, lines 14-43, power amplifier mounted on a multi-layer printed circuit card comprising a modulation circuit for modulating data and outputting a modulated signal to an antenna, data modulation such as TDMA, *Official Action, page 2.*

The passage of Nasuno cited by the Official Action in support of this rejection reads as-follows:

> According to this invention a radio wave transmission apparatus is provided which comprises: a modulation circuit for modulating data and outputting a modulated signal; a high frequency power amplifier comprising: a printed-circuit board including first to N^{th} layers including i^{th}, k^{th}, j^{th} layers, through

> holes and a ground terminal, the i^{th} and k^{th} layers being connected to the ground terminal using the through holes, $1<i<j<k\leq N$, the N, i, k, J being natural numbers; a transistor on the printed-circuit board for amplifying an input signal; an input matching circuit including first via holes, at least a first circuit pattern on the j^{th} layer and at least a first concentrated constant element on the printed-circuit board connected to the first circuit pattern by the first via holes, for receiving and supplying the input signal to the transistor; a voltage supply circuit including second via holes, at least a second circuit pattern on the j^{th} layer and at least a second concentrated constant element on the printed-circuit board connected to the second circuit pattern [sic] by the second via holes, for supplying a supply voltage to the transistor; a bias circuit for supplying a bias voltage to the transistor; an output circuit for outputting the amplified signal from the transistor; and a first shielding circuit including at least a third circuit pattern connected to the ground terminal, arranged around the first circuit pattern on the j^{th} layer to shield the first circuit pattern; a second shielding circuit having at least a fourth circuit pattern connected to the ground terminal, arranged around the second circuit pattern on the j^{th} layer; and an antenna for transmitting the amplified signal from the output circuit. *Nasuno, Column 3, lines 14-4.* (as cited by the Official Action).

As shown by the above-cited passage of Nasuno, there is no discussion therein of TDMA (or any other communications standard). Accordingly, Applicants respectfully submit that Nasuno does not disclose or suggest a power amplifier configured to transmit information during one time interval and avoid transmitting information during a second time interval as claimed.

Baum does not disclose or suggest configuring the power amplifier as recited in the pending claims. Instead, Baum relates to reducing electromagnetic interference generated by high frequency differential signal pairs by interleaving the conductive runs on the printed circuit board. Baum does not disclose or suggest using such structures for providing power to power amplifiers. Accordingly, even if Nasuno and Baum were combined, the combination would not disclose or suggest all of the recitations of the independent claims as required under Section 103.

Furthermore, there is no clear and particular evidence of a motivation or suggestion to combine Nasuno and Baum as required under Section 103. For example, Nasuno relates to the protection of power runs from outside sources of electromagnetic interference:

> The shielding circuit patterns 32 to 34 are connected to the ground terminal 105 through through holes 102 to 104 arranged

> around the circuit patterns 9a and 9b on the j^{th} layer **to shield the first circuit patterns 9a and 9b to provide high frequency isolation**. *Nasuno, Column 5, lines 20-25 (emphasis added).*

As shown by the above-cited passage from Nasuno, the structures discussed therein provide high frequency isolation of the power supply runs provided to the power amplifier to protect the power source from outside emissions.

In contrast, Baum relates to protecting outside components from electromagnetic interference generated by the differential signal pairs:

> Such a routing technique **allows for decreased emissions from differential signal pairs** while adding little or no additional printed circuit board cost of layout and construction. Such routing can be easily controlled to allow for a maximum amount of electromagnetic field cancellation. Furthermore, because such routing is implemented using conductive traces on a printed circuit board, trace impedance can be adjusted to match cable impedance for associated cables by simply adjusting the trace widths. *Baum, Column 5, lines 15-24 (emphasis added).*

As shown by the above-cited passage of Baum, the discussion therein is related to protecting other components from emissions generated by the differential signal pairs. Accordingly, Nasuno and Baum are directed to solving different problems. In particular, Nasuno is directed to shielding power runs from outside sources whereas Baum relates to protecting other components from emissions generated by signals. Accordingly, there is no clear and particular evidence of a motivation or suggestion to combine these references for at least these reasons.

Furthermore, Baum actually teaches away from a combination with Nasuno. For example, Baum reads:

> One PC board implementation for routing differential signals on a printed circuit (PC) board consists of routing a pair of conductive traces close together and in parallel at a minimum possible adjacent spacing. Additionally, the differential pair of conductive traces are sometimes ground guarded using conductive ground traces on both of the pair of conductive traces. However, an undesirable current loop results from separation of the two conductive traces. *Baum, Column 1, lines 28-36.*

As shown by the above-cited passage of Baum, the discussion therein focuses on the undesirable nature of a solution that involves ground guarding using conductive ground traces on both sides of elements to be shielded. Applicants respectfully submit that this is the type of approach that is advocated in Nasuno. For example, Figures 1 and 4 both show the shielding of power lines 9 by layers 12 and 14 as well

as runs 32-34. Accordingly, Nasuno appears to take the very approach (*i.e.* shielding using conductive ground traces on both sides) that Baum cautions against using. Accordingly, Baum teaches away from a combination with Nasuno.

In view of the above, Applicants respectfully submit that independent Claims 1, 14, 18, 19, and 21 are patentable over the alleged combination of Nasuno and Baum for at least the reasons described above. Furthermore, the dependent Claims are also patentable at least per the patentability of the independent claims.

CONCLUSION

Applicants have shown herein that even if Baum and Nasuno were combined, the combination would not disclose or suggest all the recitations of the claims. Furthermore, Applicants have demonstrated that there is no clear and particular evidence of a motivation or suggestion to combine these references and, moreover, there is significant evidence that the approaches in Nasuno and Baum are incompatible with one another, as well as teach away from a combination. Accordingly, Applicants respectfully request the withdrawal of all rejections and the allowance of all claims in due course. If any informal matters arise, the Examiner is encouraged to contact the undersigned by telephone at (919) 854-1400.

Respectfully submitted,

Robert N. Crouse
Registration No. 44,635

USPTO Customer No. 54414
Myers Bigel Sibley & Sajovec
Post Office Box 37428
Raleigh, North Carolina 27627
Telephone: 919/854-1400
Facsimile: 919/854-1401

CERTIFICATION OF ELECTRONIC TRANSMISSION

I hereby certify that this correspondence is being transmitted electronically to the U.S. Patent and Trademark Office on January ~~29,~~ 2007 using the EFS.

Audra Wooten
Date of Signature: January 29, 2007